UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

FEB 20 2020

Ms. Julie Espy
Acting Director
Division of Environmental Assessment & Restoration
Florida Department of Environmental Protection
Mail Station 3000
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Ms. Espy:

The U.S. Environmental Protection Agency has completed its water quality standards review of the document titled *Nutrient TMDLs for Lake Thonotosassa and Flint Creek and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion (WBID[1] 1522B and 1522A)*. The Florida Department of Environmental Protection (FDEP) submitted the Lake Thonotosassa and Flint Creek Total Maximum Daily Loads (TMDLs) and revised Chapter 62-304, Florida Administrative Code (F.A.C.),[2] including the numeric nutrient criteria (NNC) for the subject waters, in a letter to the EPA dated January 31, 2020 as TMDLs and as new or revised water quality standards (WQS) with the necessary supporting documentation and certification by FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under Chapter 62-304.610(13)-(14) as site-specific numeric interpretations of paragraph 62-302.530(48)(b). As referenced in paragraph 62-302.531(2)(a), the FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for the waterbodies set out in paragraphs 62-302.531(2)(b) and 62-302.531(2)(c). The total nitrogen and total phosphorus TMDLs for Lake Thonotosassa and total nitrogen TMDL for Flint Creek would also constitute a site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), for these waterbodies.

The FDEP submitted the Lake Thonotosassa and Flint Creek TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as Hierarchy 1 (H1) site-specific interpretations of the State's narrative nutrient criterion pursuant to 62-302.531(2)(a)1.a. The enclosed WQS decision document summarizes the EPA's review and approval of the WQS contained in the TMDL document. The EPA's decision document memorializes the EPA's review and approval of the WQS, in accordance with 303(c); nothing herein should be construed to constitute a review or approval of the TMDL submitted pursuant to 303(d). The EPA will conduct its review of the TMDL following this approval of the WQS.

[1] WBID refers to **w**ater**b**ody **id**entification
[2] Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

In accordance with section 303(c) of the CWA, I am hereby approving the revised WQS for total nitrogen, total phosphorus, and chlorophyll *a* for Lake Thonotosassa and for total nitrogen and chlorophyll *a* for Flint Creek. Any other criteria applicable to these waterbodies remain in effect. The requirements of paragraph 62-302.530(48)(a) also remain applicable.

If you have any comments or questions relating to the approval of the H1 WQS, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840.

Sincerely,

for Jeaneanne M. Gettle, Director
Water Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP
Mr. Daryll Joyner, FDEP
Mr. Ansel Bubel, FDEP

Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to Establish a Hierarchy 1 (H1): Water Quality Standards (WQS) Decision Document

H1: Nutrient TMDL for Lake Thonotosassa and Flint Creek (**w**ater**b**ody **id**entification (WBID) 1522B and 1522A)

Location: Hillsborough County, Florida

Status: Final

Criteria Parameter(s): The Lake Thonotosassa TMDL allocations and revised criteria for WBID 1522B are 46,962 lbs/yr for total nitrogen (TN) and 3,137 lbs/yr for total phosphorus (TP) expressed as 7-year averages of annual loads, not to be exceeded. The chlorophyll *a* criterion is 32 µg/L, expressed as an annual geometric mean (AGM) concentration not to be exceeded more than once in any consecutive 3-year period.

The revised Flint Creek criteria for WBID 1522A are 1.80 mg/L TN and 18 µg/L chlorophyll *a*, expressed as AGM concentrations not to be exceeded more than once in any consecutive 3-year period.

Background: The Florida Department of Environmental Protection (FDEP) submitted the final H1 for the *Nutrient TMDLs for Lake Thonotosassa and Flint Creek and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion (WBID[1] 1522B and 1522A)* (the "report") by letter dated January 31, 2020. The draft report for Lake Thonotosassa and Flint Creek is dated January 2019 and was received by the EPA on January 28, 2019. The final Lake Thonotosassa and Flint Creek report dated July 2019 includes H1 target concentrations and loads. A final report was received by the EPA on January 31, 2020.

The submission included:

- Submittal letter
- Nutrient TMDL for Lake Thonotosassa and Flint Creek and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption
- Public Comments Received

[1] WBID refers to **w**ater**b**ody **id**entification

EPA HIERARCHY 1 REVIEW DOCUMENT - WQS

Lake Thonotosassa and Flint Creek (WBID 1522B and 1522A)/ Hillsborough River Basin – Nutrients

This document explains how the submission meets the Clean Water Act (CWA) statutory requirements for the approval of WQS under section 303(c) and the EPA's implementing regulations in Title 40 of the Code of Federal Regulations (40 C.F.R.) part 131. The decision document memorializes the EPA's review and approval of the water quality standard, in accordance with 303(c); nothing herein should be construed to constitute a review or approval of a TMDL pursuant to 303(d).

WQS REVIEWER: Katherine Snyder, WQS Coordinator, snyder.katherine@epa.gov

This document contains the EPA's review of the above-referenced H1. This review document includes WQS review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable H1s. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.

I. WQS Decision – Supporting Rationale

Section 303(c) of the CWA and the EPA's implementing regulations at 40 C.F.R. section 131 describe the statutory and regulatory requirements for approvable WQS. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.

1. Use Designations

Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.

***Assessment**:* Lake Thonotosassa and Flint Creek are classified as Class III Freshwaters (fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

2. Protection of Downstream Uses

Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQS of downstream waters and shall ensure that its WQS provide for the attainment and maintenance of the WQS of downstream waters.

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. The Hillsborough River is located downstream of Lake Thonotosassa and Flint Creek. Flint Creek flows into the Hillsborough River segment identified as WBID 1433B. There are no water quality impairments in this segment. The reductions in nutrient loads prescribed in the Lake Thonotosassa TMDLs are not expected to cause nutrient impairments downstream. In addition, the TMDLs are based upon natural background conditions, which are inherently protective of the waters where the TMDLs apply and downstream waters.

Assessment: The H1 is providing use protection for the downstream waters.

3. Water Quality Criteria

Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

Verified Impairments
The FDEP used the Impaired Waters Rule (IWR) methodology to assess water quality in Lake Thonotosassa and Flint Creek, and both the lake and creek were verified as impaired for nutrients during the Group 2, Cycle 1 verified period (1996-2003). During the Cycle 1 assessment, the FDEP was using TN, TP, and chlorophyll *a* to calculate an annual Trophic Status Index (TSI) to interpret Florida's narrative nutrient threshold. In the Group 2, Cycle 3 assessment (2007-2014), Lake Thonotosassa was delisted for TSI because the state no longer used TSI to assess nutrient impairment. In Cycle 3, Lake Thonotosassa was put on the verified list for chlorophyll *a*, TN, and TP using Florida's numeric nutrient criteria (NNC). Additionally, Flint Creek was added to the verified list for nutrients after not attaining the TN and chlorophyll *a* criteria.

Lake Thonotosassa was also identified as impaired for un-ionized ammonia when the Cycle 1 assessment was performed and, in 2005, the EPA established a TMDL for TN to address the impairment. On February 17, 2016, the state total ammonia nitrogen (TAN) criterion became effective and replaced the un-ionized ammonia criterion. However, the new criterion was not implemented for the Group 2, Cycle 3 basin assessments adopted on October 21, 2016, because the FDEP waited until the EPA had approved the new criterion as a change to water quality standards. The EPA approved the change on July 24, 2017, and the FDEP implemented the new criterion with the Group 4, Cycle 3 basin assessments/303(d) listings.

Lake Thonotosassa has not been formally reassessed using the new TAN criterion; however, based on the IWR Run 56 Database, the lake is not impaired for TAN (with 0 exceedances out of 135 samples). In Group 2, Cycle 4 basin assessments, the FDEP plans to delist the waterbody, as the impairment for un-ionized ammonia will no longer be applicable. In addition, if Lake Thonotosassa continues to meet the new TAN criterion during the Group 2, Cycle 4 basin assessments, the FDEP will assess the lake as not impaired for TAN, placing it in Assessment Category 2. Achieving the new chlorophyll *a* and TN lake criteria documented in this report is expected to further decrease pH values sufficiently to reduce the effect of ammonia.

Lake Thonotosassa site-specific criteria
Two methods were used to develop the water quality restoration targets to address the nutrient impairment in Lake Thonotosassa. The first was model-simulated results that predicted lake water quality under nutrient loading conditions that existed when the lake had balanced aquatic flora and fauna communities. The second was paleolimnological results using methods commonly applied to infer historical lake water quality.

The FDEP selected the 80th percentile of the chlorophyll *a* AGMs from the simulated natural background conditions (1999-2010) in Lake Thonotosassa to develop the site-specific chlorophyll *a* criterion. The years 1999-2010 were used because the FDEP built upon a 2012 lake water and nutrient budget study for Southwest Florida Water Management District where the Watershed Assessment Model (WAM) was used and applied to the lake. The FDEP subsequently updated WAM to include a significant number of updates to underlying databases and corrections to model algorithms (p. 35). Use of a long-term 80th percentile is consistent with an exceedance frequency of no more than once in a 3-year period. Therefore, the FDEP concluded that the chlorophyll *a* target of 32 µg/L, expressed as an annual geometric mean (AGM) concentration not to be exceeded more than once in any consecutive 3-year period, is representative of natural background conditions. The value was derived using a water

quality model and supported by paleolimnological results, and as a result, is protective of the designated uses of the lake.

For informational purposes only, the TN and TP concentrations for Lake Thonotosassa corresponding to the loading criteria are 1.64 and 0.08 mg/L, respectively. These concentrations were analyzed as AGMs not to be exceeded more than once in a 3-year period when the site-specific TN and TP loads are met. The concentrations also represent the 80th percentile AGM concentrations from the simulated natural background conditions (1999-2010). These nutrient concentrations serve as the concentration-based restoration targets, which will meet the chlorophyll *a* criterion of 32 µg/L. However, the applicable water quality criteria for TN and TP in Lake Thonotosassa are expressed as loads and described below.

The nutrient loads that attained the chlorophyll *a* criterion and the concentration-based restoration targets for TN and TP were determined using the WAM and the U.S. Army Corps of Engineers BATHTUB model. The site-specific load-based criteria for TN and TP in Lake Thonotosassa are 46,962 lbs/year and 3,137 lbs/year, respectively. To acknowledge the natural variability in chlorophyll *a* levels because of changes in rainfall, the TN and TP load-based criteria are expressed as maximum long-term (7-year) averages of annual loads identified to meet the chlorophyll *a* criterion.

Flint Creek site-specific criteria
Outflow from Lake Thonotosassa dominates the flow and the water quality of Flint Creek; therefore, the nutrient criteria developed for the lake determines the appropriate nutrient targets and criteria for Flint Creek. The site-specific criteria for Flint Creek are based on regression models used to predict creek water quality when the lake achieves natural background water quality. Based on assessment information presented in Chapter 2 of the report, the creek is not attaining the stream thresholds for chlorophyll *a* and TN but is attaining the generally applicable TP threshold. Therefore, site-specific criteria for Flint Creek were developed for chlorophyll *a* and TN based on the expected creek water quality when the lake TMDLs are achieved. To express the exceedance frequency in a manner consistent with the expression of the lake chlorophyll *a* target and the generally applicable stream TP threshold, the 80th percentiles of the nutrient AGMs in the period from 1999-2010 are used to establish the site-specific criteria for the creek. The site-specific criteria for Flint Creek are a chlorophyll *a* AGM of 18 µg/L and a TN AGM of 1.80 mg/L, not to be exceeded more than once in any consecutive 3-year period.

Assessment: The site-specific Lake Thonotosassa criteria are 46,962 lbs/yr for TN and 3,137 lbs/yr for TP expressed as 7-year averages of annual loads, not to be exceeded. The chlorophyll *a* criterion is 32 µg/L, expressed as an AGM concentration not to be exceeded more than once in any consecutive 3-year period. The loads were derived from watershed model TN and TP lake targets of 1.64 mg/L for TN and 0.08 mg/L for TP expressed as AGMs. The concentrations are given for comparative purposes only. The TN and TP criteria are expressed as loads.

The site-specific Flint Creek criteria for WBID 1522A are 1.80 mg/L TN and 18 µg/L chlorophyll *a*, expressed as AGM concentrations not to be exceeded more than once in any consecutive 3-year period.

The resulting water quality will protect the designated uses for this waterbody. Any other criteria applicable to this waterbody remain in effect, including the nutrient criteria for parameters set out in 62-302.531(2), F.A.C.

4. Scientific Defensibility

Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods.

Lake Thonotosassa was verified as impaired for nutrients based upon TSI data during the verified period in 2003. Subsequent assessments indicated that the generally applicable NNC were also not being met in Lake Thonotosassa and in Flint Creek. This TMDL document based the Lake Thonotosassa TN and TP targets on a site-specific criterion of 32 µg/L chlorophyll *a*, based on model-simulated background conditions and paleolimnological data. The loads were derived from watershed model TN and TP in-lake targets of 0.08 mg/L for TP and 1.64 mg/L for TN expressed as AGMs. The concentrations are given for comparative purposes only. These concentration values correspond to 7-year averages of annual loads of TN of 46,962 lbs/yr and TP of 3,137 lbs/yr. The TMDL document based the Flint Creek criteria on the expected creek water quality when the lake TMDLs are achieved, resulting in a chlorophyll *a* AGM of 18 µg/L and a TN AGM of 1.80 mg/L, not to be exceeded more than once in any consecutive 3-year period. The resulting water quality is expected to protect the designated uses for these waterbodies.

Assessment: The EPA determined that the selection of a chlorophyll *a* value of 32 µg/L as the response variable target is appropriate, and the technical approach to calculate the resulting total watershed nutrient loads results is scientifically sound. These approaches which include the U.S. Army Corps of Engineers BATHTUB model and WAM to calculate the total watershed nutrient loads are described in the report.

5. Public Participation

Section 131.20(b) provides that states shall hold a public hearing when revising WQS, in accordance with provisions of state law and the EPA's public participation regulation (40 C.F.R. part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.

A public workshop was conducted by the FDEP on February 13, 2019 in Temple Terrace, Florida, to obtain comments on the draft nutrient TMDLs for Lake Thonotosassa and Flint Creek. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that would replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these particular waters. The FDEP also held a public hearing on June 14, 2019 in Tallahassee, Florida.

Assessment: The FDEP has met the public participation requirements for this H1.

6. Certification by the State Attorney General

Section 131.6(e) requires that the state provide a certification by the state Attorney General or other appropriate legal authority within the state that the WQS were duly adopted pursuant to state law.

A letter from the FDEP General Counsel, Justin G. Wolfe, dated January 31, 2020, certified that the Lake Thonotosassa and Flint Creek TMDLs were duly adopted as WQS pursuant to state law.

Assessment: The FDEP has met the requirement for Attorney General certification for this H1.

7. Endangered Species Act Section 7 Consultation

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.

The only listed species potentially present in Lake Thonotosassa and Flint Creek are gulf sturgeon and manatees. Per correspondence with the U.S. Fish & Wildlife Service in February 2019, there is a dam structure downstream of Lake Thonotosassa and Flint Creek on the Hillsborough River that would prevent gulf sturgeon and manatees from accessing the waterbodies. Thus, an ESA section 7 consultation for this standards action is not required.

Assessment: The EPA has met the ESA requirements for this action.

II. Conclusion

The EPA Region 4 Water Division Director is **APPROVING** the H1 NNC addressed by this decision document in accordance with section 303(c) of the CWA, as consistent with the CWA and 40 C.F.R. part 131.

The H1 NNC presented in this decision document will constitute the site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable numeric criteria in subsection 62-302.531(2) for these particular waters, pursuant to paragraph 62-302.531(2)(a)1.b., F.A.C. Based on the chemical, physical, and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that the revised NNC for TN, TP, and chlorophyll *a* in Lake Thonotosassa and for TN and chlorophyll *a* in Flint Creek provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 C.F.R. § 131.11.

Therefore, the revised nutrient criteria for TN and TP for Lake Thonotosassa are 46,962 lbs/yr for TN and 3,137 lbs/yr for TP expressed as 7-year averages of annual loads, not to be exceeded. The revised criteria for chlorophyll *a* for Lake Thonotosassa is 32 µg/L. For Flint Creek, the revised nutrient criteria are 1.80 mg/L for TN, expressed as an AGM concentration not to be exceeded more than once in any consecutive 3-year period and 18 µg/L for chlorophyll *a*. All other criteria applicable to these waterbodies remain in effect, including other applicable criteria at 62-302.531(2)(c), F.A.C. The requirements of paragraph 62-302.530(48)(a), F.A.C. also remain applicable.

The EPA's decision document memorializes the EPA's review and approval of the water quality standard, in accordance with 303(c); nothing herein should be construed to constitute a review or approval of a TMDL pursuant to 303(d).